

Climate: Landsat Reveals Impact of Salt Marsh Losses on Global Carbon Budgets

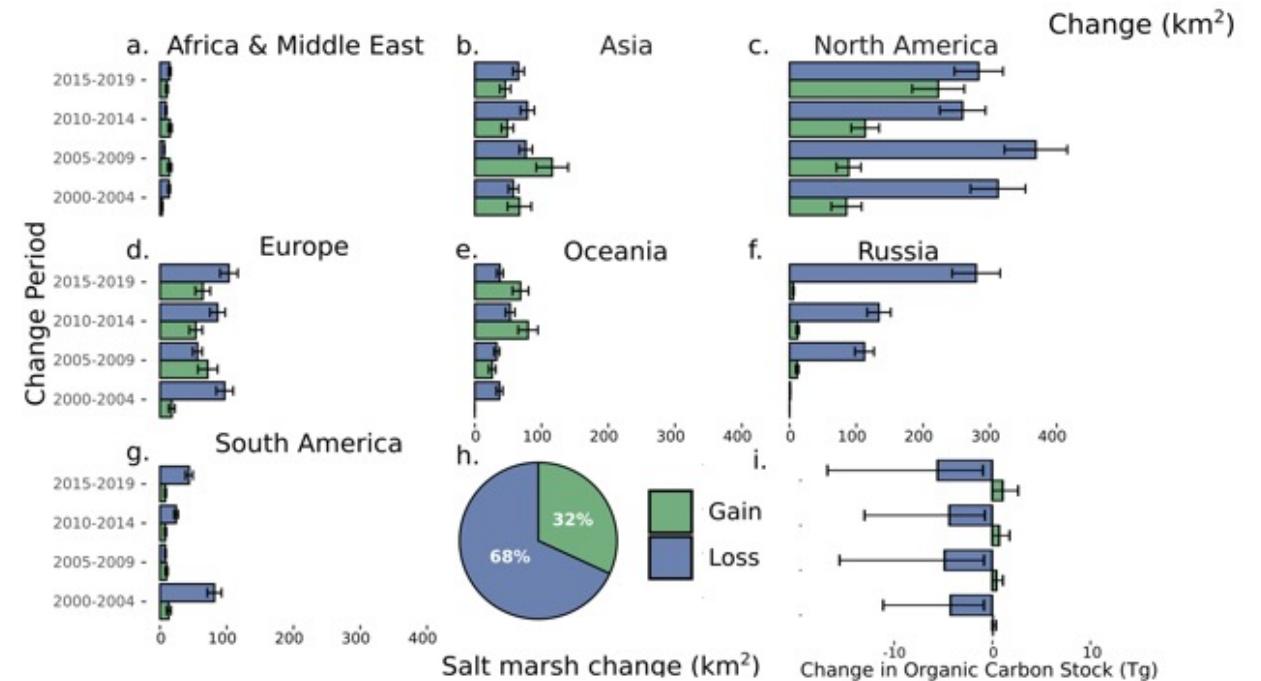
Salt marshes provide carbon sequestration, coastal protection, sea level rise adaptation, and recreation. Sea-level rise, storm events, mangrove encroachment, and drainage are known drivers of salt marsh loss. The global magnitude and location of changes in salt marsh extent are uncertain, which contributes to uncertainty in carbon emission estimates.

Data from Landsat 5, 7, and 8 were analyzed to detect changes in salt marsh environments. From 2000-2019, there was a global net salt marsh loss of 1,452.84 km², which resulted in net global emissions of 16.3 Terragrams of carbon dioxide across the study period—an annual equivalent of emissions from approximately 3.5 million motor vehicles. Globally, 4.7% of all salt marsh losses had recovered by 2019. In North America, watersheds impacted by higher category hurricanes lost more salt marsh area.

Storms were identified as a major driver of loss. This highlights the climate dependence of these systems and expected increases in losses from climate change due to increases in storm intensity and frequency.

Campbell, A.D., Fatoyinbo, L., Goldberg, L. et al. Global hotspots of salt marsh change and carbon emissions. Nature (2022).

<https://www.nasa.gov/feature/esnt/2022/nasa-scientists-map-global-salt-marsh-losses-and-their-carbon-impact>



Global salt marsh loss and gain for 2000-2019 in different parts of the world. Blue indicates salt marsh loss and green indicates salt marsh gain.